

60,427-238; 2000P07642US01
Serial No. 09/802,592

IN THE CLAIMS

1. (Currently Amended) An active noise attenuation system comprising:

an air inlet duct housing having an inlet end into which air is drawn and an outlet end operably connected to an engine;

a sound detector for sensing noise emanating from said air inlet duct housing and generating a noise signal corresponding to said noise;

a speaker mounted within said air inlet duct housing and facing said inlet end;

a resonator supported by said air inlet duct housing and positioned between said speaker and said engine for reducing low frequency engine noise; and

a controller for receiving and phase shifting said noise signal and sending a control signal to said speaker to generate a sound field to attenuate said noise wherein said resonator attenuates a first frequency of engine noise and said speaker, sound detector, and controller cooperate to attenuate a second frequency of engine noise with said second frequency of engine noise being lower than said first frequency of engine noise.
2. (Original) A system according to claim 1 wherein said resonator attenuates said low frequency noise resulting in an attenuated engine noise level and said sound detector senses said attenuated engine noise level.
3. (Currently Amended) A system according to claim 1 including an air filter for filtering contaminants from the air, said air filter being positioned behind said speaker.

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4. (Currently Amended) A system according to claim 3 wherein said resonator is mounted to said air filter.

5. (Currently Amended) ~~A system according to claim 4~~ An active noise attenuation system comprising:

an air inlet duct housing having an inlet end into which air is drawn and an outlet end operably connected to an engine;

a sound detector for sensing noise emanating from said air inlet duct housing and generating a noise signal corresponding to said noise;

a speaker mounted within said air inlet duct housing and facing said inlet end;

an air filter for filtering contaminants from the air, said filter being positioned behind said speaker;

a resonator supported by said housing and mounted to said air filter wherein said resonator is positioned between said speaker and said engine for reducing low frequency engine noise and wherein said air filter is cylindrically shaped with a first end fitting over said resonator and a second end fitting over said outlet end; and

a controller for receiving and phase shifting said noise signal and sending a control signal to said speaker to generate a sound field to attenuate said noise.

6. (Currently Amended) A system according to claim 3 wherein said resonator extends outwardly from said air inlet duct housing between said air filter and said engine.

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7. (Original) A system according to claim 1 wherein said resonator reduces low frequency engine noise within a predetermined range.

8. (Original) A system according to claim 7 wherein said speaker is less than four hundred millimeters in diameter.

9. (Currently Amended) An active noise attenuation system comprising:
an engine for generating low frequency noise having a profile defining a peak noise;
an air inlet duct housing having an inlet into which air is drawn and an outlet operably connected to said engine;
a speaker mounted within said air inlet duct housing and facing said inlet;
an air filter mounted within said air inlet duct housing between said inlet and outlet for filtering contaminants from the air;
a resonator supported by said air inlet duct housing and positioned between said speaker and said engine for attenuating said peak noise resulting in an attenuated low frequency engine noise wherein said resonator is supported directly by said air filter within said air inlet duct housing;
a sound detector for sensing said attenuated low frequency engine noise and generating an attenuated low frequency engine noise signal; and

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a controller for receiving and phase shifting said attenuated low frequency engine noise signal and sending a control signal to said speaker to generate a sound field to attenuate said attenuated low frequency engine noise signal.

10. (Original) A system according to claim 9 wherein said resonator attenuates said peak noise within a predetermined range.

11. (Original) A system according to claim 10 wherein said speaker is less than four hundred millimeters in diameter.

12. (Currently Amended) ~~A system according to claim 10~~ An active noise attenuation system comprising:

an engine for generating low frequency noise having a profile defining a peak noise;

an air inlet duct housing having an inlet into which air is drawn and an outlet operably connected to said engine;

a speaker mounted within said air inlet duct housing and facing said inlet;

an air filter mounted within said air inlet duct housing between said inlet and outlet for filtering contaminants from the air;

a resonator supported by said air inlet duct housing and positioned between said speaker and said engine for attenuating said peak noise within a predetermined range resulting in an attenuated low frequency engine noise wherein said air filter is cylindrically shaped with a first end fitting over said resonator and a second end fitting over said outlet end;

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a sound detector for sensing said attenuated low frequency engine noise and generating an attenuated low frequency engine noise signal; and

a controller for receiving and phase shifting said attenuated low frequency engine noise signal and sending a control signal to said speaker to generate a sound field to attenuate said attenuated low frequency engine noise signal

13. (Currently Amended) A system according to claim 10 wherein said resonator extends radially outward from said housing between said air filter and said engine.

14. (Previously Presented) A system according to claim 3 wherein said air filter is substantially enclosed by said air inlet duct housing.

15. (Previously Presented) A system according to claim 14 wherein said resonator includes a resonator structure defining a hollow resonator chamber, said resonator structure being supported by said air inlet duct housing between said speaker and said outlet end.

16. (Currently Amended) ~~A system according to claim 14~~ An active noise attenuation system comprising:

an air inlet duct housing having an inlet end into which air is drawn and an outlet end operably connected to an engine;

a sound detector for sensing noise emanating from said air inlet duct and generating a noise signal corresponding to said noise;

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a speaker mounted within said air inlet duct housing and facing said inlet end;

an air filter for filtering contaminants from the air, said air filter being positioned behind said speaker and wherein said air filter is substantially enclosed by said air inlet duct housing;

a resonator supported by said air inlet duct housing and positioned between said speaker and said engine for reducing low frequency engine noise wherein said resonator is supported directly by said air filter within said air inlet duct housing; and

a controller for receiving and phase shifting said noise signal and sending a control signal to said speaker to generate a sound field to attenuate said noise

17. (Cancelled).

18. (Currently Amended) ~~A system according to claim 9~~ An active noise attenuation system comprising:

an engine for generating low frequency noise having a profile defining a peak noise;

an air inlet duct housing having an inlet into which air is drawn and an outlet operably connected to said engine;

a speaker mounted within said air inlet duct housing and facing said inlet;

an air filter mounted within said air inlet duct housing between said inlet and outlet for filtering contaminants from the air;

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a resonator supported by said air inlet duct housing and positioned between said speaker and said engine for attenuating said peak noise resulting in an attenuated low frequency engine noise;

a sound detector for sensing said attenuated low frequency engine noise and generating an attenuated low frequency engine noise signal wherein said speaker comprises a single speaker with said sound detector being positioned between said speaker and said inlet and wherein said resonator and said air filter are positioned between said speaker and said outlet; and

a controller for receiving and phase shifting said attenuated low frequency engine noise signal and sending a control signal to said speaker to generate a sound field to attenuate said attenuated low frequency engine noise signal.

19. (Previously Presented) A system according to claim 18 wherein said air filter is enclosed within said air inlet duct housing.

20. (Cancelled)